CLAIMS

1. A method for administering a photodynamic therapy to destroy or impair target cells expressing a VEGF receptor in a mammalian subject, comprising the steps of:

(a) administering to the mammalian subject a therapeutically effective amount of a liposome delivery system, comprising:

(i) a first conjugate comprising a first member of a ligand-receptor binding pair conjugated to one of an antibody and an antibody fragment that selectively binds to a VEGF receptor of the target cells;

(ii) a second conjugate comprising a second member of the ligand-receptor binding pair, conjugated to a photoreactive compound; and

(iii) a liposome, separately conjugated to the second member of the ligand-receptor binding pair, wherein:

the first member binds to the second member of the ligand-receptor binding pair;

(b) irradiating at least a portion of the mammalian subject in which the target cells are disposed, using light having a waveband corresponding at least in part to the characteristic light absorption waveband of the photoreactive compound; wherein

the intensity of the light used for the step of irradiating and the duration of irradiation have been selected such that the target cells are destroyed and the non-target tissue through which the light passes remains undamaged.

2. The method of claim 1, further comprising the step of allowing sufficient time for any targeted photosensitizer compound that is not bound to the target cells to clear from the non-target cells of the mammalian subject prior to the step of irradiating.

3. The method of claim 1, wherein the target cells are comprised in a target tissue selected from the group consisting of a vascular endothelial tissue, an abnormal vascular wall of a tumor, a solid tumor, a tumor of head,

a tumor of a neck, a tumor of a gastrointestinal tract, a tumor of a liver, a tumor of a breast, a tumor of a prostate, a tumor of a lung, a nonsolid tumor, malignant cells of one of a hematopoietic tissue and a lymphoid tissue, lesions in a vascular system, a diseased bone marrow, and diseased cells in which the disease is one of an autoimmune and an inflammatory disease.

4. The method of claim 3, wherein the target tissue is a lesion of a type selected from the group consisting of atherosclerotic lesions, arteriovenous malformations, aneurysms, and venous lesions.

5. The method of claim 1, wherein the step of irradiating comprises the step of providing a light source that is disposed internal to an intact skin layer of the mammalian subject and wherein said light source is activated to produce the light.

6. The method of claim 1, wherein the step of irradiating comprises providing a light source that is disposed external to an intact skin layer of the mammalian subject and wherein the light source is activated to produce the light.

7. The method of claim 1, wherein the photoreactive compound is selected from the group consisting of indocyanine, methylene blue, toluidine blue, aminolevulinic acid, chlorins, phthalocyanines, porphyrins, purpurins, bacteriochlorins, merocyanines, psoralens and texaphyrins.

8. The method of claim 1, wherein the step of irradiating is carried out for a time interval of from about 4 minutes to about 72 hours.

9. The method of claim 1, wherein the step of irradiating is carried out for a time interval of from about 60 minutes to about 48 hours.

10. The method of claim 1, wherein the step of irradiating is carried out for a time interval of from about 2 hours to about 24 hours.

11. The method of claim 1, wherein the total fluence of the light used for irradiating is between about 30 Joules and about 25,000 Joules.

12. The method of claim 1, wherein the total fluence of the light used for irradiating is between about 100 Joules and about 20,000 Joules.

13. The method of claim 1, wherein the total fluence of the light used for irradiating is between about 500 Joules and about 10,000 Joules.

14. A method for administering a photodynamic therapy to destroy or impair target cells in a tumor in a mammalian subject, comprising the steps of:

(a) administering to the subject a therapeutically effective amount of a targeted photosensitizer compound having a characteristic light absorption waveband, wherein:

the targeted photosensitizer compound selectively binds with the target cells; and

the photosensitizer compound is targeted to a receptor on a vascular endothelial tissue or an abnormal vascular wall of a tumor;

(b) activating the photosensitizer bound to the target cells by irradiating with light having a waveband corresponding at least in part to the characteristic light absorption waveband of the targeted photosensitizer compound from a light source disposed within the tumor, wherein:

the intensity of the light used for the step of irradiating and the duration of irradiation are selected such that within a zone of treatment the target cells are destroyed and the non-target tissue through which the light passes remains undamaged; and

(c) sequentially expanding the zone of treatment outward in a stepwise manner by repositioning the light source, thereby destroying tumor tissue.

15. The method of claim 14, wherein the receptor is a VEGF receptor.

16. The method of claim 14, further comprising the step of allowing sufficient time for any targeted photosensitizer compound that is not bound to the target cells to clear from the non-target cells of the mammalian subject prior to the step of irradiating.

17. A liposome delivery system, comprising:

(i) a first conjugate comprising a first member of a ligand-receptor binding pair conjugated to one of an antibody and an antibody fragment that selectively binds to a VEGF receptor of the target cells;

(ii) a second conjugate comprising a second member of the ligand-receptor binding pair, conjugated to a photoreactive compound; and

(iii) a liposome, separately conjugated to the second member of the ligand-receptor binding pair, wherein the first member binds to the second member of the ligand-receptor binding pair.